

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (withdrawn) A composition comprising an isolated human polynucleotide from human brain selected from the group consisting of:
 - (a) a polynucleotide comprising the potassium channel Kv4.3 nucleotide sequence set forth in SEQ. ID NO. 1 or in SEQ. ID NO. 3, deposited under accession number ATCC-_____;
 - (b) a polynucleotide having at least 90% identity over its entire length to a polynucleotide encoding a potassium channel Kv4.3 polypeptide of SEQ ID NO: 2 or SEQ ID NO: 4;
 - (c) a polynucleotide which is an allelic variant of the polynucleotide of (a)-(b) above; and
 - (d) a polynucleotide capable of hybridizing under stringent conditions to any one of the polynucleotides specified in (a)-(c).
2. (withdrawn) An isolated DNA molecule encoding a Kv4.3 potassium channel polypeptide having the amino acid sequence set forth in SEQ ID NO: 2 or SEQ ID NO: 4.
3. (withdrawn) The isolated DNA sequence of claim 2, having the nucleotide sequence set forth in SEQ ID NO: 1 or SEQ ID NO: 3.
4. (withdrawn) The polynucleotide of claim 1 wherein said polynucleotide is operably linked to at least one expression control sequence.
5. (withdrawn) A host cell transformed with the polynucleotide of claim 1.
6. (withdrawn) The host cell of claim 5 wherein said cell is a prokaryotic or eukaryotic cell.
7. (withdrawn) A process for producing a Kv4.3 potassium channel polypeptide comprising the steps of introducing the polynucleotide of claim 1 into a host cell, growing a culture of the host cell in a culture medium so that said host expresses the Kv4.3 polypeptide, and purifying the polypeptide from the culture medium or host cell.

8. (currently amended) A polypeptide produced ~~according to the process of claim 7 by~~
(a) introducing the polynucleotide of SEQ ID NO: 1 into a host cell;
(b) growing a culture of the host cell in a culture medium so that said host expresses
the Kv4.3 polypeptide; and
(c) purifying the polypeptide from the culture medium or host cell.
9. (currently amended) A Kv4.3 polypeptide comprising ~~(a) an amino acid sequence which is~~
~~at least 95% identical to comprising~~ the amino acid sequence of SEQ ID NO: 2 or an allelic
variant thereof; or (b) an amino acid sequence which is at least 95% identical to the amino
acid sequence of SEQ ID NO: 4.
10. (currently amended) A Kv4.3 polypeptide comprising an amino acid of SEQ ID NO: 2 ~~or~~
~~SEQ ID NO: 4.~~
11. (withdrawn) An oligonucleotide which encodes an antisense sequence complementary to
a portion of a human Kv4.3 potassium channel sequence of SEQ ID NO: 1 or SEQ ID NO: 3
and which inhibits expression of the human Kv4.3 gene.
12. (withdrawn) An antibody immunospecific for the human Kv4.3 polypeptide of claim 9.
13. (withdrawn) A method for diagnosing a disease characterized by aberrant expression of
human potassium channel Kv4.3 polypeptide of claim 9 comprising (a) incubating a sample
indicative of the aberrant expression of the human polypeptide with a reagent comprising a
polypeptide comprising a region at least 90% identical to the amino acid sequence of SEQ ID
NO: 2 or SEQ ID NO: 4 under conditions effective for specific binding of said reagent to said
human polypeptide; and (b) determining the binding of said reagent to said peptide in the
sample.
14. (withdrawn) A diagnostic process comprising analyzing for the presence of a
polynucleotide of claim 1 in a sample derived from a host.
15. (withdrawn) A method for identifying compounds which modulates the activity or
expression of a human Kv4.3 polypeptide of claim 9 comprising (a) incubating a sample

comprising Kv4.3 polypeptide in a test medium containing said test compound and a reagent comprising a polypeptide comprising a region at least 90% identical to the amino acid sequence of SEQ ID NO: 2 or SEQ ID NO: 4 under conditions effective for specific binding of said reagent to said Kv4.3 peptide; (b) comparing the binding of said reagent to said peptide in the sample in the presence and absence of said test compound; and (c) relating the difference between the binding in step (b) to the test compound regulating the activity of the Kv4.3 polypeptide.

16. (withdrawn) A transgenic or chimeric animal comprising the polynucleotide of claim 1.

17. (new) A polypeptide produced by

- (a) introducing the polynucleotide of SEQ ID NO: 3 into a host cell;
- (b) growing a culture of the host cell in a culture medium so that said host expresses the Kv4.3 polypeptide; and
- (c) purifying the polypeptide from the culture medium or host cell.

18. (new) A Kv4.3 polypeptide comprising an amino acid sequence comprising the amino acid sequence of SEQ ID NO: 4 or an allelic variant thereof.

19. (new) A Kv4.3 polypeptide comprising an amino acid of SEQ ID NO: 4.

20. (new) An isolated amino acid sequence comprising greater than 96% homology to SEQ ID NO: 2.

21. (new) An isolated amino acid sequence comprising greater than 99% homology to SEQ ID NO: 4.